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Abstract

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Frederick B. Warner, Jr., and Robert L. Bruce

PUBLICATION OF RESULTS has long been an integral part of research activity, and the information explosion of the past 30 years has focused recurring attention on aspects of communications among scientists (SATCOM, 1969). Aside from the sharing of new knowledge, publication as an activity also has assumed considerable importance in evaluations of performance for promotion and salary considerations (Haas and Collen, 1963).

Several authors have reported aspects of reward and recognition for publication on a broad scale, as with scientists in the same field (Cole and Cole, 1967), at several types of institutions (Bailar, 1965), and the scientific community at large (Hagstrom, 1965).

Pursuing Crane's (1965) observation that land-grant college scientists appeared to be more institutionally oriented than others, this study sought information that would differentiate between the perceived effects of quantity and quality of technical publication activity in the dispensing of selected rewards and recognitions that are under the complete or partial control of the directors of state agricultural experiment stations (SAES).

Abstract

The role of publication activity in the reward system of academic institutions has long been a concern to scientists and university administrators alike. The extent to which publication activity influences the apportionment of rewards available in the system, and whether volume or quality of publications receives the most credit are two facets of this concern.

Survey responses from 46 state agricultural experiment station directors and 429 scientists in 1972 indicate differing perceptions on the matter. The results shed light on the institutional reward system and highlight some important discrepancies between avowed practices of research administrators and the beliefs of the scientists affected by those practices.

Dispensation of Rewards

Recognition and reward for scientific achievement takes many forms. The focus of our interest was on those institutional rewards which are likely to be partially or wholly within the purview of the experiment station's chief administrative officer.

At larger institutions such influence may not be apparent, or may be diluted by bureaucratic structure, but in any case, the director's influence cannot be discounted. At a minimum, his perceptions can be taken to represent the official intentions of the station.

Quantity and Quality of Publication

Relating scientific publication activity to recognition and reward inevitably raises questions of quantity and quality. For most purposes, quantity can be satisfactorily defined in terms of numbers of titles, pages, authorships or similar measures. Quality measures are more judgmental, and accordingly, are more subject to challenge and debates. But however quality is defined, it is presumably held to be good by scientists and administrators alike, to constitute one criterion on which publication productivity is judged, and to be seen as separate from (and perhaps in competition with) quantity: It was therefore desirable within the logic of the study to let each respondent define the terms as he or she saw fit and to respond in terms of the relative importance of the two criteria.

It was not the intent of this study to polarize quantity and quality of scientific publication activity, but rather to put them in juxtaposition and to emphasize that they are indeed two separate considerations, possibly of distinctly different operant values in the institutional reward system.

Selected Institutional Rewards

The same questionnaire items were presented to both directors and scientists as judgment queries, with the opportunity to select a response from four scale values. The **directors** were asked: "As a matter of operating policy at your institution, how important is faculty research publication activity as a consideration for the institutional rewards and recognitions listed below?" **Scientists** were asked: "In your experience and observation how important is faculty research publication activity as a consideration for the institutional rewards and recognitions listed below?"

Both directors and scientists were asked to rate the importance of quantity and quality of technical publication activity as considerations in the dispensing of

1) promotion and tenure,

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2) research space and equipment,
3) salary merit increments,
4) support for meeting and conference attendance,
5) advancement to administrative position,
6) designation as representative to prestigious organizations,
7) other honors and recognitions at this institution.

In a sense, the directors (table 1a) were asked to declare an office position on quantity and quality in research publication, while the scientists (table 1b) were asked for their impression of the relative importance of quantity and quality in the allocation of rewards and recognitions at their stations.

The directors were "forced" to choose from four possible responses: None, Low, Moderate, or High; whereas scientists were allowed the additional choice of "Honestly don't know." The latter was provided to accommodate the newly-appointed, or yet unpublished scientists; it also would allow some measure of how well or poorly this aspect of station management had been communicated to faculty scientists.

Influence of Publication Productivity

If one assumes that the director's responses truly reflect operating policy in their institutions, then some aspect of publications productivity enters into each of the decisions about which queries were made, with greatest influence (ratings of "high" or "moderate") on four—promotion and tenure, salary or merit increment determinations, other institutionally controlled rewards, and selection as institutional representative to prestigious organizations.

In every case, quality was more likely than quantity to be credited with "high" and "moderate" responses. Quantity, however, was rated as of at least moderate influence by more than half the responding directors in the case of every reward except support for meeting attendance.

Scientists' ratings of the influence of publication productivity were lower overall than those of the directors, with the scientists less likely to ascribe "high" or "moderate" influence and more likely to reply "low" or "none". The various decisions studied were seen as being affected in the same rank order as indicated by the directors, however.

Scientists indicated that publications output had a particularly "high" influence on the allocations of research space and equipment, or support for meeting attendance; however, a higher percentage of directors indicated "moderate" importance for these rewards than did scientists.

The item of greatest disparity between scientists and directors was that of advancement to administrative positions. Whereas many of the directors

Table 1a
Experiment station directors' responses to relative importance to quantity and quality of technical publication activity as considerations for selected institutional rewards.

Reward item	Publication activity	Relative importance to directors: None (%)	Low (%)	Moderate (%)	High (%)
Promotion and tenure	Quantity	----	4.3	50.0	45.7
	Quality	----	----	34.8	65.2
Research space and equipment	Quantity	6.5	41.3	43.5	8.7
	Quality	6.5	23.9	54.3	15.2
Salary merit increments	Quantity	----	8.7	54.3	37.0
	Quality	----	6.5	26.1	67.4
Support for meeting attendance	Quantity	13.0	39.1	37.0	10.9
	Quality	10.9	26.1	37.0	26.1
Advancement to administration	Quantity	8.7	23.9	60.9	6.5
	Quality	8.7	15.2	52.2	23.9
Representative to prestigious organizations	Quantity	4.3	17.4	52.2	26.1
	Quality	4.4	4.3	39.1	52.2
Other honors and recognitions	Quantity	4.4	13.0	56.5	26.1
	Quality	4.4	----	39.1	56.5

Table 1b
Experiment station scientists' responses to relative importance of quantity and quality of technical publication activity as considerations for selected institutional rewards.

Reward item	Publication activity	Relative importance to scientists: Don't know (%)	None (%)	Low (%)	Moderate (%)	High (%)
Promotion and tenure	Quantity	5.2	1.4	7.3	27.3	58.8
	Quality	7.8	5.0	22.7	36.0	28.4
Research space and equipment	Quantity	13.6	6.2	20.2	39.0	21.0
	Quality	14.2	9.9	27.6	33.2	15.1
Salary merit increments	Quantity	7.7	2.8	8.9	35.4	45.1
	Quality	10.2	5.9	23.7	33.4	26.8
Support for meeting attendance	Quantity	8.3	11.1	24.8	35.5	20.3
	Quality	8.8	14.3	31.0	31.4	14.5
Advancement to administration	Quantity	31.6	10.8	21.2	21.2	15.1
	Quality	32.1	11.0	26.2	22.6	8.1
Representative to prestigious organizations	Quantity	28.3	5.7	11.2	28.5	26.4
	Quality	28.7	5.3	11.6	27.7	26.7
Other honors and recognitions	Quantity	20.5	4.5	12.4	32.9	29.8
	Quality	20.5	4.8	16.9	30.4	27.3

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accorded ''moderate'' or ''high'' importance to publication activity, roughly one-third of the scientists ascribed it little or no importance. Conspicuously, 32 percent of the scientist respondents did not know how publication activity is related to advancement to administrative levels.

(Parenthetically, the latter item evoked several marginal notations suggesting that assignment to administrative responsibilities in the organization is hardly considered to be a promotion! These remarks, albeit few in number, and the scale response patterns suggest that among experiment station scientists, the prospect of moving into administrative echelons is not an especially cherished reward for publication activity.)

A large proportion of scientists also indicated that they do now know the extent to which publication activity enters into decisions about ''other'' rewards and the selection of institutional representatives to prestigous organizations. Inasmuch as the latter was an area in which the directors indicated that publication is of moderate to high importance, this would seem to represent a serious lack of communication.

The marked differences between low-, moderate-, and high-importance responses for different rewards and between director and scientist judgments invited further comparison.

To reduce each response set to a single quantitative value, the percentage of responses obtained for low, moderate, and high were factored by arbitrarily assigned values and the three weighted values were summed to obtain a single point score for each item. The combined point values for quantity and quality responses were then ranked to reflect the apparent relative importance of publication activity in the allocation of each reward (table 2).

Table 2
Apparent relative importance of selected institutional rewards (combined responses to importance of quantity and quality of technical publication activity).

Reward item	Directors' ranking	Scientists' ranking
Promotion and tenure	1	1
Research space and equipment	6	4
Salary merit increments	2	2
Support for meeting attendance	7	6
Advancement to administration	5	7
Representative to prestigious organizations	4	5
Other honors and recognitions	3	3

Quantity and Quality

The most striking pattern of these scaled responses is the reversal in the importance of quantity and quality of publication activity between the directors and the scientists (figure 1). For all of the listed reward items,

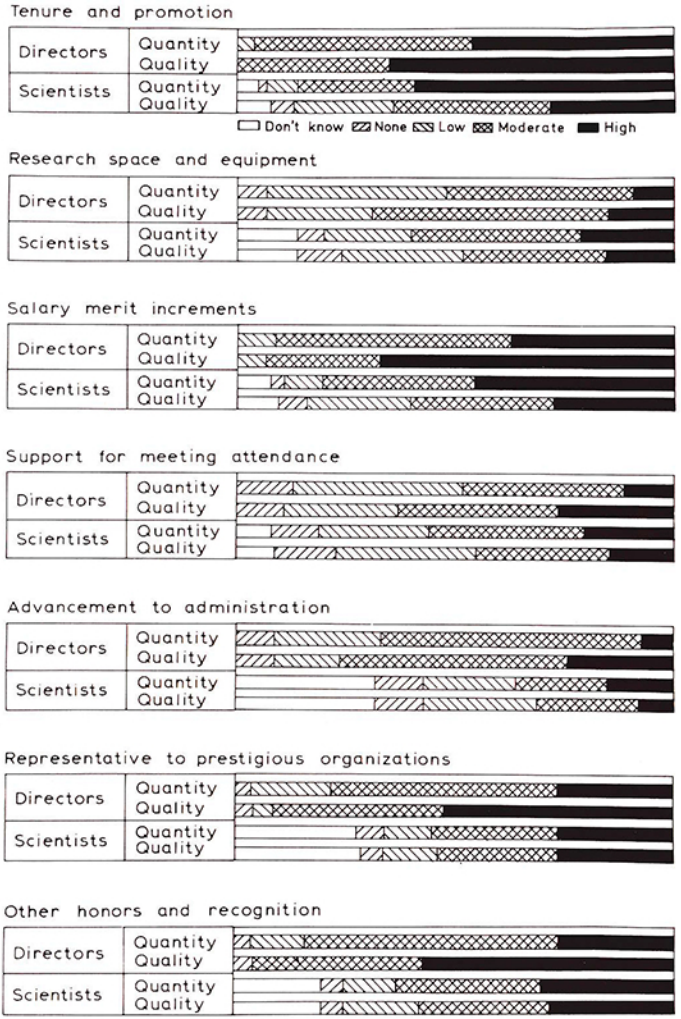

Figure 1
Experiment station directors' and scientists' perceptions of relative importance of quantity and quality of technical publication activity as a consideration for selected institutional rewards.

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directors consistently gave heavier weight to quality considerations, while scientists instead perceive quantity as being given greater importance in practice in the dispensing of institutional rewards. This was especially apparent for tenure and promotion and for salary merit increments, but less pronounced among the other reward-item responses.

Implications

There are two unknowns which must condition the conclusions to be derived from this limited study: We cannot be sure of the extent to which the seven items about which we queried actually serve as incentives or rewards to scientists, and we cannot be sure of the extent to which actual institutional practice is in line with the responses of the directors. Despite these limitations, however, several points seem worthy of consideration.

Whether or not research administrators value quality of publication over quantity, this is not seen to be the case by the scientists affected. This suggests that careful attention should be given to the bases for quality judgments to insure that they reflect the intended values. It suggests further that these be communicated to—or better yet, determined in consultation with—the scientists themselves.

Another area in which better communication would seem to be needed is that of the institutional decisions which are to be affected by publication activity. Whether or not a scientist perceives an administrative or representational assignment as a reward of incentive, it cannot possibly serve as one if he does not know the criteria on which it is awarded. Further, it is more likely to be accepted as a reward if it is known to be valued as such by those who award it.

A final conclusion is possible. While publication is far from being the only activity an experiment station director would want to reward in a scientist, and the list of possible incentives we studied is far from exhaustive, it is clear that there is little consensus or systematic policy in this area. In times of restricted budgets, when directors are likely to have less control over such obvious and commonly accepted rewards as salary and tenure, it would be good management to explore the possibility of other, less-costly incentives and to incorporate them into a systematic and well understood structure.

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